

Erratum to: Noncommutative geometry and fluid dynamics

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There are several corrections related to our paper, as given below.

The correct form of (17) is,

$$\{j^i(\mathbf{r}), j^j(\mathbf{r}')\} = j^j(\mathbf{r})\partial_i\delta(\mathbf{r} - \mathbf{r}') + j^i(\mathbf{r}')\partial_j\delta(\mathbf{r} - \mathbf{r}'). \quad (1)$$

There is a crucial change of sign in the Dirac bracket of (37),

$$\{\rho(\mathbf{r}), \rho(\mathbf{r}')\} = -\theta_{ij}\partial_i\rho(\mathbf{r})\partial_j\delta(\mathbf{r} - \mathbf{r}') \quad (2)$$

with (37, 38) remaining unchanged. This leads to a canonical form of the continuity equation,

$$\dot{\rho} = \{H, \rho\} = -\partial_i(\rho v_i) \quad (3)$$

instead of (54). However the noncommutative extension of the Euler equation (56) remains unchanged. Subsequently,

contrary to our results of a noncommutativity-modified Friedmann equation in (84, 85), in the present model, to first order in noncommutative parameter θ_{ij} , the Friedmann equation remains unmodified.

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